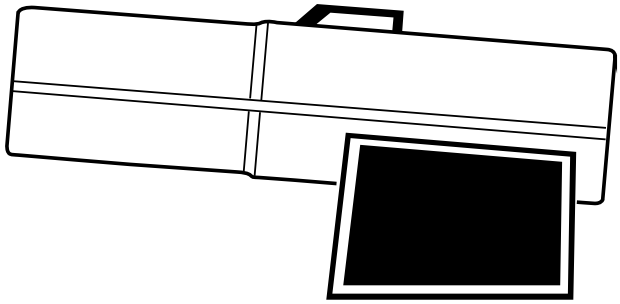
DESA™ INTERNATIONAL

PROPANE CONSTRUCTION HEATER

OWNER'S MANUAL

For more information, visit www.desatech.com



LP155AT Models
150,000 Btu/Hr with Built-in Thermostat

IMPORTANT: Read and understand this manual before assembling, starting or servicing heater. Improper use of heater can cause serious injury. Keep this manual for future reference.

⚠ GENERAL HAZARD WARNING:

FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURN, ASPHYXIATION, CARBON MONOXIDE POISONING, AND/OR ELECTRICAL SHOCK.

ONLY PERSONS WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATER.

IF YOU NEED ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTIONS MANUAL, LABELS, ETC. CONTACT THE MANUFACTURER.

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SAFETY INFORMATION

⚠ WARNINGS

⚠ WARNING: FIRE, BURN, INHALATION, AND EXPLOSION HAZARD. KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIALS, PAPER OR CARDBOARD, A SAFE DISTANCE AWAY FROM THE HEATER AS RECOMMENDED BY THE INSTRUCTIONS. NEVER USE THE HEATER IN SPACES WHICH DO OR MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE, SOLVENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS.

⚠ WARNING: NOT FOR HOME OR RECREATIONAL VEHICLE USE.

The heater is designed for use as a construction heater in accordance with ANSI Z83.7/CGA2.14. Other standards govern the use of fuel gases and heating products for specific uses. Your local authority can advise you about these. The primary purpose of construction heaters is to provide temporary heating of buildings under construction, alteration or repair. Properly used, the heater provides safe economical heating. Products of combustion are vented into the area being heated.

We cannot foresee every use which may be made of our heaters**. Check with your local fire safety authority if you have questions about heater use**.

Other standards govern the use of fuel gases and heat producing products for specific uses. Your local authorities can advise you about these.

Carbon Monoxide Poisoning: Some people are more affected by carbon monoxide than others. Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, and/or nausea. If you have these signs, the heater may not be working properly. **Get fresh air at once!** Check for proper ventilation and have heater serviced.

Propane Gas: Propane gas is odorless. An odor-making agent is added to propane gas. The odor helps you detect a propane gas leak. However, the odor added to propane gas can fade. Propane gas may be present even though no odor exists.

Make certain you read and understand all Warnings. Keep this manual for reference. It is your guide to safe and proper operation of this heater.

- Approved by the New York City Fire Department under Certificate of Approval #4953. To be used only at construction site with applicable New York City Codes, Regulations, Rules, Directives, Permits, etc.
- This product has been approved for use in the Commonwealth of Massachusetts.
- This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.
- Install and use heater with care. Follow all local ordinances and codes. In the absence of local ordinances and codes, refer to the *Standard for Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58* and the *Propane Gas Installation Code, CAN/CGA B149.2*. This instructs on the safe storage and handling of propane gases.
- Use only the electrical voltage and frequency specified on model plate. The electrical connections and grounding of the heater shall follow the *National Electric Code, ANSI/NFPA 70* or the *Canadian Electrical Code, Part 1*.
- Electrical grounding instructions — This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle or extension cord.
- Use only the hose and factory preset regulator provided with the heater.
- Use only propane gas set up for vapor withdrawal.
- Provide adequate ventilation. Before using heater, provide at least a three-square-foot opening of fresh, outside air for each 100,000 Btu/Hr of rating.
- For indoor use only. Do not use heater outdoors.
- Do not use heater in occupied dwellings or in living or sleeping quarters.
- Do not use heater in a basement or below ground level. Propane gas is heavier than air. If a leak occurs, propane gas will sink to the lowest possible level.
- Keep appliance area clear and free from combustible materials, gasoline, paint thinner, and other flammable vapors and liquids. Dust is combustible. Do not use heater in areas with high dust content.
- Minimum heater clearances from combustible materials:
  Outlet: 8 Ft. Sides: 2 Ft. Top: 6 Ft. Rear: 2 Ft.
- Keep heater at least six feet from propane tank(s). Do not point heater at propane tank(s) within 20 feet.
- Keep propane tank(s) below 100° F.
- Check heater for damage before each use. Do not use a damaged heater.
- Check hose before each use of heater. If highly worn or cut, replace with hose specified by manufacturer before using heater.
- Locate heater on stable and level surface if heater is hot or operating.
- Never block air inlet (rear) or air outlet (front) of heater.
- Keep heater away from strong drafts, wind, water spray, rain, or dripping water.
- Keep children and animals away from heater.
- This heater is equipped with a thermostat. Heater may start at anytime.
- Never move, handle, or service a hot or operating heater. Severe burns may result. You must wait 15 minutes after turning heater off.
- To prevent injury, wear gloves when handling heater.
- Never attach duct work to heater.
- Do not alter heater. Keep heater in its original state.
- Do not use heater if altered.
- Turn off propane supply to heater and unplug heater when not in use.
- Use only original replacement parts. This heater must use design-specific parts. Do not substitute or use generic parts. Improper replacement parts could cause serious or fatal injuries.

PRODUCT IDENTIFICATION

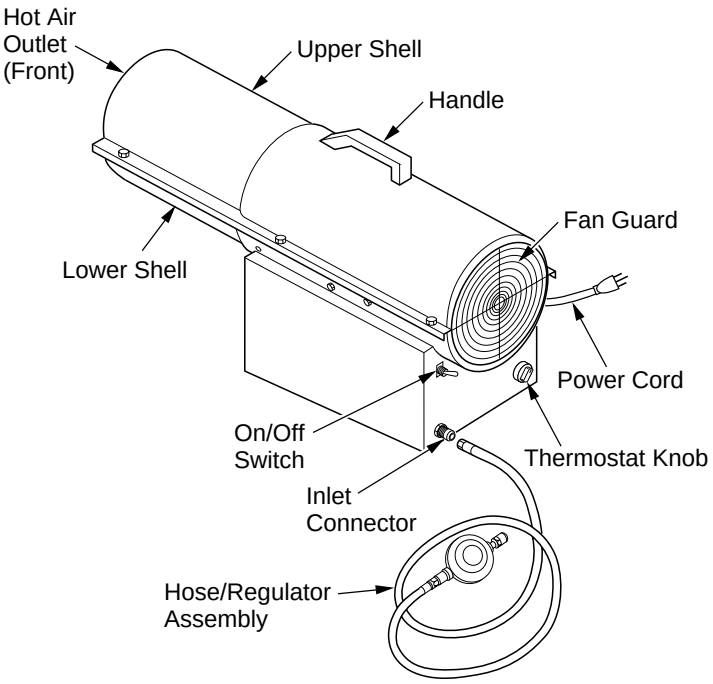


Figure 1 - 150,000 Btu/Hr Model

UNPACKING

1. Remove all packing items applied to heater for shipment. Keep plastic cover caps (attached to inlet connector and hose/regulator assembly) for storage.
2. Remove all items from carton.
3. Check all items for shipping damage. If heater is damaged, promptly inform dealer where you bought heater.

THEORY OF OPERATION

The Fuel System: The hose/regulator assembly attaches to the propane gas supply. The propane gas moves through the solenoid valve and out the nozzle.

The Air System: The motor turns the fan. The fan pushes air into and around the combustion chamber. This air is heated and provides a stream of clean, hot air.

The Ignition System: The direct spark ignitor (DSI) sends voltage to the spark plug/ignitor. The spark plug/ignitor ignites the fuel and air mixture.

The Safety Control System: This system causes the heater to shut down if the flame goes out.

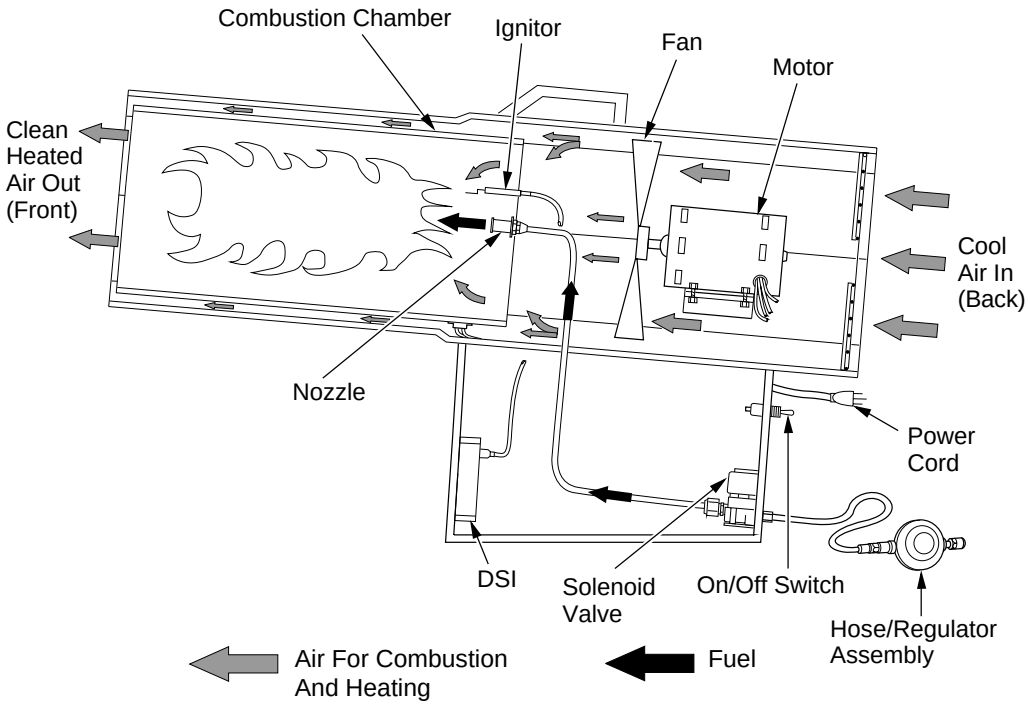


Figure 2 - Cross Section Operational View

PROPANE SUPPLY

Propane gas and propane tank(s) are to be furnished by the user.

Use this heater only with a propane vapor withdrawal supply system. See Chapter 5 of the *Standard for Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58*. Your local library or fire department will have this booklet.

The amount of propane gas ready for use from propane tanks varies. Two factors decide this amount:

1. The amount of propane gas in tank(s)
2. The temperature of tank(s)

The chart below shows the number of 100 pound tanks needed to run this heater.

Do not operate this product with any tank smaller than 100 pounds.

Temperature (°F) At Tank Location	Number of tanks (150,000 Btu/Hr)
32	2
20	2
10	3
0	3
-10	(Use larger
-20	tank)

Less gas is vaporized at lower temperatures. You may need two or more 100 pound tanks or one larger tank in colder weather. Your local propane gas dealer will help you select the proper supply system. The minimum surrounding-air temperature rating for each heater is -20°F (-29°C).

INSTALLATION

⚠ WARNING: Review and understand the warnings in the *Safety Information* section, page 2. They are needed to safely operate this heater. Follow all local codes when using this heater.

⚠ WARNING: Test all gas piping and connections for leaks after installing or servicing. Never use an open flame to check for a leak. Apply a mixture of liquid soap and water to all joints. Bubbles forming show a leak. Correct all leaks at once.

1. Provide propane supply system (see *Propane Supply*, column 1).
2. Connect POL fitting on hose/regulator assembly to propane tank(s). Turn POL fitting counterclockwise into threads on tank. Tighten firmly using wrench. Tighten regulator with vent pointing down.
3. Connect hose to inlet connector. Tighten firmly using a wrench.

   IMPORTANT: Extra hose or piping may be used if needed. Install extra hose or piping between hose/regulator assembly and propane tank. You must use the regulator supplied with heater.
4. Open propane supply valve on propane tank(s) slowly. *Note:* If not opened slowly, excess-flow check valve on propane tank may stop gas flow. If this happens, close propane supply valve and open again slowly.
5. Check all connections for leaks.

⚠ WARNING: Never use an open flame to check for a leak. Apply a mixture of liquid soap and water to all joints. Bubbles forming show a leak. Correct all leaks at once.

6. Close propane supply valve.

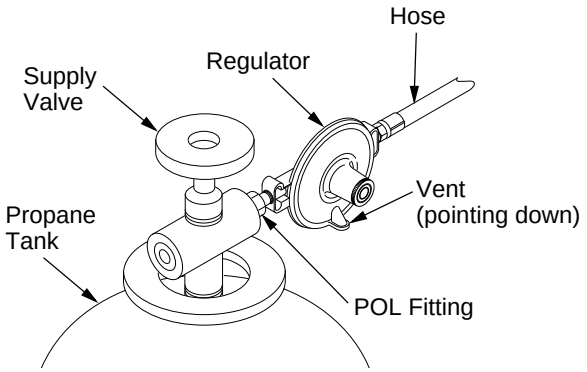


Figure 3 - Regulator With Vent Pointing Down

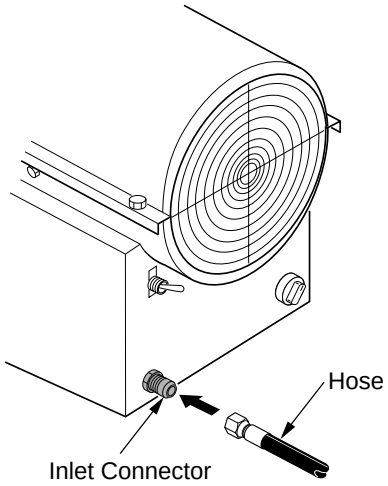


Figure 4 - Hose and Inlet Connector

VENTILATION

⚠WARNING: Follow the minimum fresh, outside air ventilation requirements. If proper fresh, outside air ventilation is not provided, carbon monoxide poisoning can occur. Provide proper fresh, outside air ventilation before running heater.

Provide a fresh air opening of at least three square feet for each 100,000 Btu/Hr rating. Provide extra fresh air if more heaters are being used.

OPERATION

⚠ WARNING: Review and understand the warnings in the *Safety Information* section, page 2. They are needed to safely operate this heater. Follow all local codes when using this heater.

TO START HEATER

1. Follow all installation, ventilation and safety information.
2. Locate heater on stable and level surface. Make sure strong drafts do not blow into front or rear of heater.
3. Plug power cord of heater into a three-prong, grounded extension cord. Extension cord must be at least six feet long. Extension cord must be UL listed.

   Extension Cord Size Requirement

   Up to 50 feet long, use 18 AWG rated cord.

   51 to 100 feet long, use 16 AWG rated cord.

   101 to 200 feet long, use 14 AWG rated cord.

4. Plug extension cord into a 120 volt/60 hertz, three-hole, grounded outlet.
5. Open propane supply valve on propane tank(s) slowly. *Note:* If not opened slowly, excess-flow check valve on propane tank may stop gas flow. If this happens, close propane supply valve and open again slowly.
6. Turn on/off switch to the ON position. Adjust thermostat to desired setting. If heater does not start, thermostat setting may be too low. Turn thermostat knob to higher position to start heater. *Note:* If heater does not start, turn on/off switch to the OFF position. Wait ten seconds for safety control to reset, then try again.

Note: If heater still does not start after turning thermostat knob to a higher position, the high temperature switch may have opened during thermostat shut down. Allow high temperature switch to reset. This usually takes 10-15 minutes. Try starting heater again after switch resets.

TO STOP HEATER

1. Tightly close propane supply valve on propane tank(s).
2. Wait a few seconds. Heater will burn gas left in supply hoses.
3. Turn on/off switch to the OFF position.
4. Unplug heater.

STORAGE

⚠ CAUTION: Disconnect heater from propane supply tank(s).

1. Store propane tank(s) in safe manner. See Chapter 5 of *Standard for Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58* and/or *CAN/CGA B149.2*. Follow all local codes.
2. Place plastic cover caps over brass fittings on inlet connector and hose/regulator assembly.
3. Store in dry, clean, and safe place. Do not store hose/regulator assembly inside heater combustion chamber.
4. When taking heater out of storage, always check inside of heater. Insects and small animals may place foreign objects in heater. Keep inside of heater free from combustible and foreign objects.

MAINTENANCE

⚠WARNING: Never service heater while it is plugged in, connected to propane supply, operating, or hot. Severe burns and electrical shock can occur.

1. Keep heater clean. Clean heater annually or as needed to remove dust and debris. If heater is dirty or dusty, clean heater with a damp cloth.
2. Inspect heater before each use. Check connections for leaks. Apply mixture of liquid soap and water to connections. Bubbles forming show a leak. Correct all leaks at once.
3. Inspect hose/regulator assembly before each use. If hose is highly worn or cut, replace.
4. Have heater inspected yearly by a qualified service agency.
5. Keep inside of heater free from combustible and foreign objects.

SERVICE PROCEDURES

⚠ WARNING: Never service heater while it is plugged in, connected to propane supply, operating, or hot. Severe burns and electrical shock can occur.

UPPER SHELL REMOVAL

1. Remove screws along each side of heater using 5/16" nut-driver. These screws attach upper and lower shells together.
2. Lift or slide upper shell off.
3. Remove fan guard.

FAN

IMPORTANT: Remove fan from motor shaft before removing motor from heater. The weight of the motor resting on the fan could damage the fan pitch.

1. Remove upper shell (see above).
2. Use 1/8" hex wrench to loosen setscrew which holds fan to motor shaft.
3. Slip fan off motor shaft.
4. Clean fan using soft cloth moistened with kerosene or solvent.
5. Dry fan thoroughly.
6. Replace fan on motor shaft. Make sure setscrew is touching back of flat surface on motor shaft (see Figure 8).
7. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds).
8. Replace fan guard andupper shell.

IGNITOR

Make sure gap between ignitor electrode and burner nozzle is .13/.15". Access ignitor electrode from inside combustion chamber. No other maintenance is needed for ignitor.

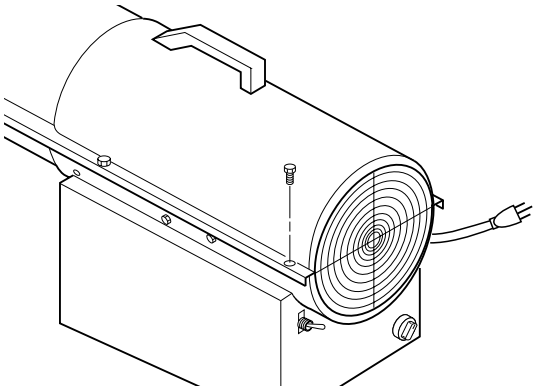


Figure 5 - Upper Shell Removal

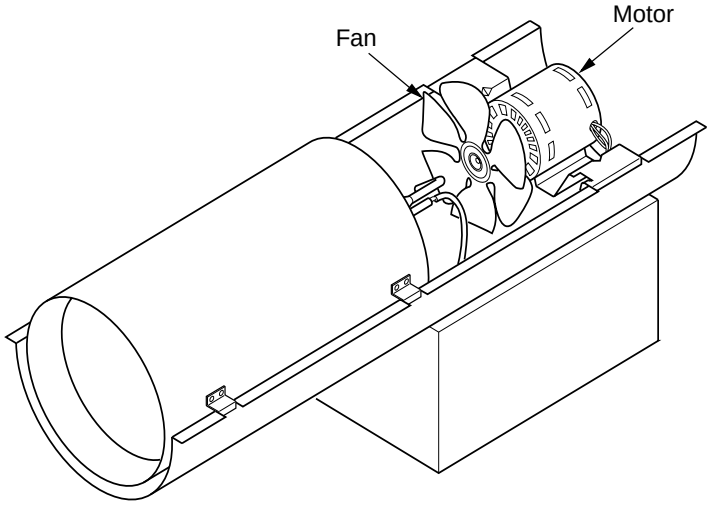


Figure 6 - Fan Removal

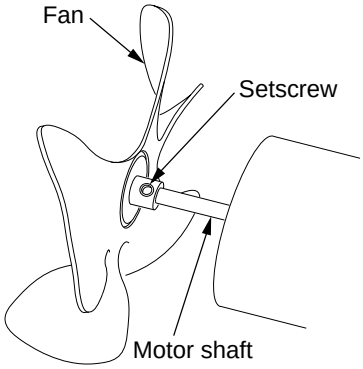


Figure 7 - Fan, Motor Shaft, and Setscrew Location

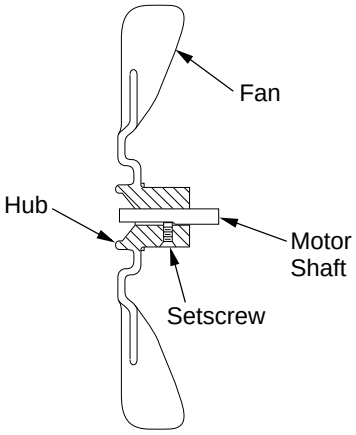
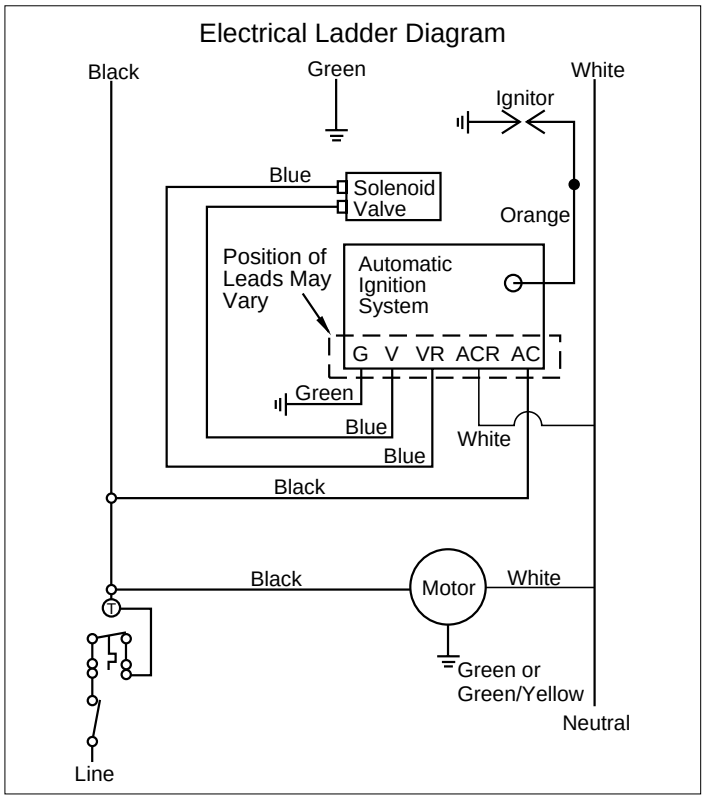


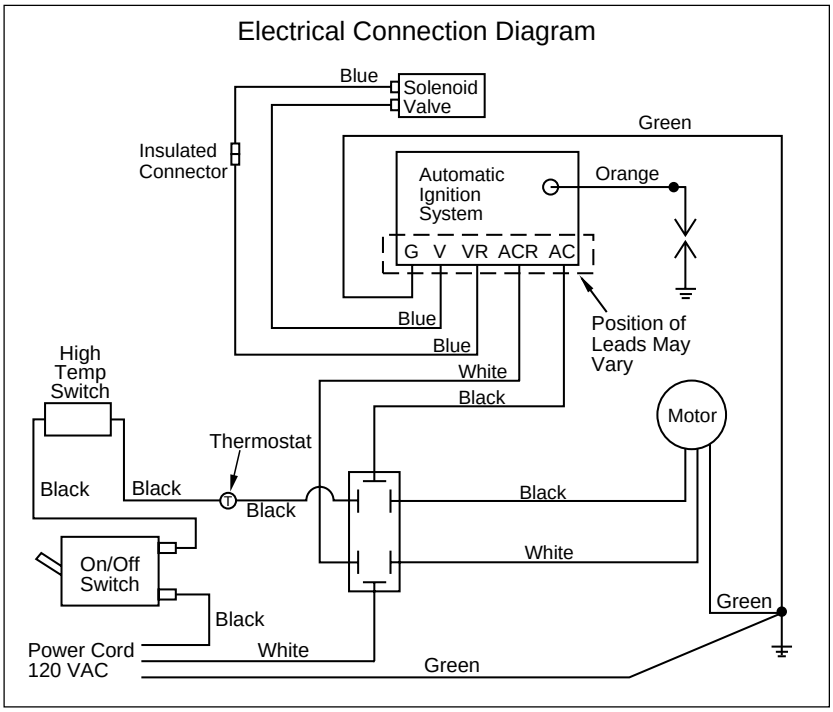
Figure 8 - Fan Cross Section

SPECIFICATIONS

Input Rating (Btu/Hr)	150,000
Fuel	Propane Vapor Only
Fuel Consumption	
Gallons/Hour	1.6
Pounds/Hour	7.0
Supply Pressure To Regulator	
Minimum (for purposes of input adjustment)	10 psi
Maximum	Tank Pressure
Regulator Outlet Pressure (Factory Preset)	12.5" WC
Manifold Pressure	9.8" WC
Hot Air Output (CFM Approx)	550
Motor	3,430 RPM, 1/8 HP
Electric Input	120 V/60 Hz
Amperage	2.2
Ignition Type	Direct Spark, Interrupted
Spark Plug Gap (Inches)	N/A
Ignitor Gap (Inches)	.13/.15
Weight (Pounds)	
Heater	24
Shipping	35
Size - L x W x H (Inches)	36 1/4 x 14 1/2 x 20

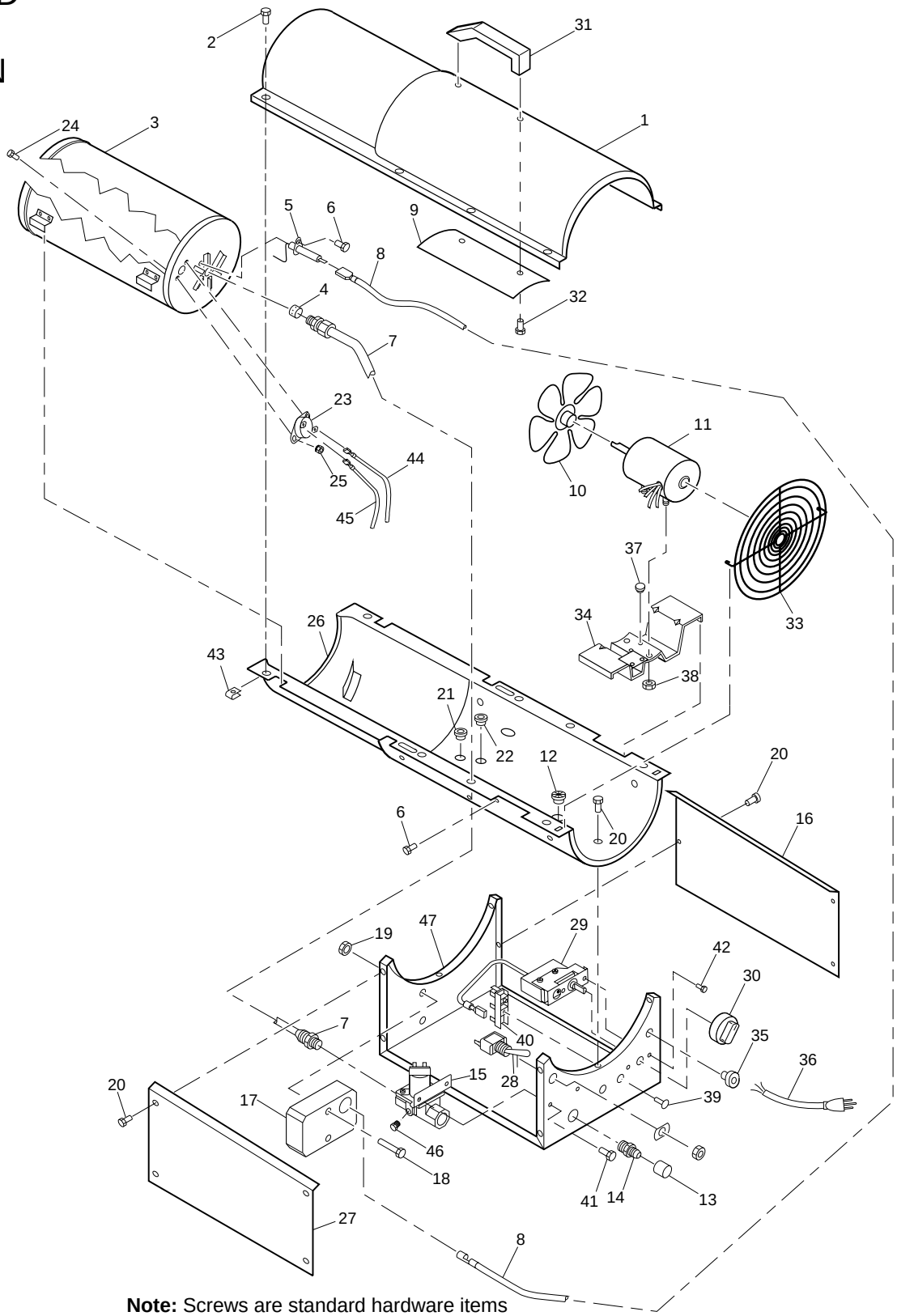
WIRING DIAGRAMS





ILLUSTRATED PARTS BREAKDOWN

LP155AT MODELS



Note: Screws are standard hardware items

PARTS LIST

LP155AT MODELS

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* on page 10 of this manual.

KEY NO.	PART NUMBER	DESCRIPTION	QTY.
1	098511-116	Upper Shell (Replacement Part Will Be Black)	1
2	M15823-27	Screw, #10-16 x 1/2"	8
3	098512-35	Combustion Chamber Kit	1
4	099138-01	Nozzle	1
5	099133-01	Ignitor	1
6	M11084-38	Screw, #8-18 x 3/8"	2
7	099334-01	Fuel Tube Kit	1
8	097806-02	Ignitor Cable	1
9	M51108-01	Heat Shield	1
10	M51153-01	Fan	1
11	105336-01	Motor	1
12	097776-01	Universal Bushing	1
13	078978-01	Sleeve Cap	1
14	M51572-02	Male Connector	1
15	103015-01	Solenoid Valve	1
16	098450-03	Side Cover	1
17	M51605-02	DSI Control	1
18	M12461-7	Screw, #6-32 x 1"	2
19	099432-01	Hex Nut, #6-32	2
20	107992-01	Screw, #10-16 x 3/8"	13
21	M50104-05	Shorty Bushing	1
22	M50104-01	Shorty Bushing	1
23	101732-01	Thermal Limit Switch	1
24	097968-05	Screw, #4-40 x 1/2"	2
25	097384-04	Hex Nut, #4-40 Captive Washer	2
26	098511-129	Lower Shell (Replacement Part Will Be Black)	1
27	098447-03	Side Cover	1
28	098226-01	On/Off Switch	1
29	097657-03	Built-in Thermostat	1
30	104905-01	Thermostat Knob	1
31	M51104-01	Handle	1
32	M11084-29	Screw, #10-16 x 3/4"	2
33	097964-03AA	Fan Guard	1
34	101206-01	Motor & Relay Support Brkt Assy	1
35	M11143-1	Strain Relief Bushing	1
36	098219-17	Power Cord	1
37	M50631	Rubber Bumper	2
38	NTC-4C	Lock Nut	2
39	099157-01	Break Mandrell Rivet, 3/16"	1
40	099125-01	Terminal Board	1
41	M12461-25	Screw, #10-32 x 1/4"	2
42	M10908-1	Screw Hex TPG “F” 6-32 x .25	2
43	M11271-8	Clip Nut	8
44	101480-10	High Temperature Wire Assy	1
45	101480-11	High Temperature Wire Assy	1
46	098276-01	Plug 1/8 NPTF Hex	1
47	099161-10	Base	1

PARTS AVAILABLE—NOT SHOWN

079231-01	Service Center List	1
103017-01	General Information Decal	1
LPA3070	Regulator & Hose Assembly	1
LPA4020	Fuel Gas Connector	1
099504-01	Warning Decal	2
103402-01	Wiring Decal	1
103021-01	Thermostat Decal	1

ACCESSORIES

Purchase accessories and parts from your nearest dealer or service center. If your dealer or service center can not supply an accessory or part, either contact your nearest Parts Central (listed in the separate Authorized Service Center booklet) or call DESA International's Parts Department at 1-800-972-7879 for referral information. You can also write to the address listed on the back page of this manual.

Regulator: LPA2100

Hose and Regulator Assembly: LPA3070

Fuel Gas Connector: LPA4020

A POL adapter with excess-flow check valve.

TECHNICAL SERVICE

You may have further questions about this heater. If so, contact DESA International's Technical Service Department at 1-800-323-5190.

You can also visit DESA International's Technical Service web site at **www.desatech.com.**

REPLACEMENT PARTS

⚠WARNING: Use only original replacement parts. This heater must use design-specific parts. Do not substitute or use generic parts. Improper replacement parts could cause serious or fatal injuries. This will also protect your warranty coverage for parts replaced under warranty.

PARTS UNDER WARRANTY

Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Technical Service Department at 1-800-323-5190. When calling DESA International, have ready:

- your name
- your address
- model and serial numbers of your heater
- how heater was malfunctioning
- purchase date

In most cases, we will ask you to return the defective part to the factory.

PARTS NOT UNDER WARRANTY

Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Parts Department for referral information at 1-800-972-7879. When calling DESA International, have ready:

- model number of your heater
- the replacement part number

NOTES

WARRANTY AND REPAIR SERVICE

KEEP THIS WARRANTY

LIMITED WARRANTY

DESA International warrants this product and any parts thereof, to be free from defects in materials and workmanship for one (1) year from the date of first purchase when operated and maintained in accordance with instructions. This warranty is extended only to the original retail purchaser, when proof of purchase is provided.

This warranty covers only the cost of parts and labor required to restore the product to proper operating condition. Transportation and incidental costs associated with warranty repairs are not reimbursable under this warranty.

Warranty service is available only through authorized dealers and service centers.

This warranty does not cover defects resulting from misuse, abuse, negligence, accidents, lack of proper maintenance, normal wear, alteration, modification, tampering, contaminated fuels, repair using improper parts, or repair by anyone other than an authorized dealer or service center. Routine maintenance is the responsibility of the owner.

THIS EXPRESS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

DESA International assumes no responsibility for indirect, incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

We reserve the right to amend these specifications at any time without notice. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

WARRANTY SERVICE

Should your heater require service, return it to your nearest authorized service center. Proof of purchase must be presented with the heater. The heater will be inspected. A defect may be caused by faulty materials or workmanship. If so, DESA International will repair or replace the heater without charge.

REPAIR SERVICE

Return your heater to your nearest authorized service center. Repairs not covered by the warranty will be billed at standard prices. Each Service Center is independently owned and operated. We reserve the right to amend these specifications at any time without notice.

Model _____

Serial No. _____

Date of Purchase _____

DESA™ INTERNATIONAL

2701 Industrial Drive
P.O. Box 90004
Bowling Green, KY 42102-9004
www.desatech.com

103014 01

NOT A UPC

For information, write: DESA International, P.O. Box 90004
Bowling Green, Kentucky 42102-9004 ATTN: Customer Service Department
When writing, always include model number and serial number.

103014-01
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